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## REVIEWS

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*A Preliminary Report on the Geology of Louisiana.* By GILBERT D. HARRIS, geologist in charge, and A. C. VEATCH, assistant geologist. Made under direction of State Experiment Station, Baton Rouge, La. Wm. C. Stubbs, Ph.D., director. [No place or date.]

This report is divided into three sections: I, Historical Review; II, General Geology, and III, Special papers.

In view of the important disagreements between the earlier writers upon Louisiana geology and the authors of this volume the historical review with which it opens is especially important and interesting. The full meaning of this review is only clear after one reads the second part and some of the third part of the volume. The lowest horizons represented are Cretaceous, and the earlier determination of these beds seems to have been based upon the occurrence of a single species, *Exogyra costata*. The present survey has been able to get together a fairly good representation of the Cretaceous fauna of the state (p. 292-297).

The Mansfield of Hilgard, which was referred by Hopkins to the Jackson (p. 29-35) at the top of the Eocene, turns out to be Lower Lignitic Eocene (pp. 64-73), a horizon not hitherto known to exist in Louisiana. The conclusions reached in regard to the Cretaceous give us a new view of the general geology of the state. The dips and many other facts cited "indicate northeast-southwest local folds parallel to the old shore lines," rather than a northwest-southeast mountain chain (p. 62.) Of the Vicksburgh beds which some of the earlier writers thought they had found between Red River and the Sabine, Professor Harris says "we have found no trace of Vicksburg deposits west of Red River" (p. 90).

A part of the second section of the report is devoted to Economic Geology, and under this head are given valuable data regarding the salt, sulphur, and clay deposits of the state. Among the special reports are several of more than unusual interest. One of these is Mr. Veatch's paper upon "The Shreveport Area." Under this head he

treats at length "the great raft"—a subject of deep interest to geologists (pp. 160-173). He explains its origin, method and rates of growth and decay, and describes the effects of such accumulations and of their removal. He makes some interesting observations upon the lakes of the area, which he classes as: (1) cut-off or horseshoe lakes; (2) lakes of enclosure; and (3) raft lakes. The "raft lakes," it seems, have been attributed to a sinking of the land, but Mr. Veatch thinks they have been formed by the choking up of the former drainage by the accumulation of drift timber in old stream channels (p. 188). The activity of geologic agents in regions of such sluggish drainage has evidently not been realized hitherto, for here in a region at or close to its base level "Lakes have been formed and destroyed; streams have been formed and abandoned; waterfalls produced to destroy themselves; new streams formed out of parts of the beds of old ones and temporary reversals of the drainage systems have been affected" (p. 154). The articles on the Five Islands (pp. 213-262) is by far the most thorough and satisfactory that has yet appeared upon the remarkable salt deposits of Louisiana. The investigation of the clays by Dr. H. Ries is a valuable piece of work done by one of our best authorities on the subject.

Papers of paleontologic interest are given in the third section by Professor Harris upon the Natchitoches area, and upon the Cretaceous and Lower Eocene faunas of Louisiana. These papers are illustrated by seven beautifully prepared plates. Professor Harris also contributes a paper upon meridian lines, and another upon road making. This last subject is entitled to the serious attention of the people of Louisiana. That the geologists are unable to make the most of their time because of the bad roads of the state is to be regretted, and the geologists have our sympathy, but when many of these roads become such quagmires for several months of the year that traffic over them comes to a dead standstill, it is a matter that more or less seriously affects the prosperity and happiness of the entire population.

Arthur Hollick contributes a well illustrated and valuable article upon the Lower Tertiary plants from the northwestern part of the state (pp. 276-288, and 16 plates).

It is pleasant to see that Dr. Stubbs, the director of the State Experiment Stations, under whom the geological survey is being made, appreciates the fitness, ability, and enthusiasm of the men who are doing the work. Indeed it would have been difficult if not impossible to have

found a man better fitted than Professor Harris to take charge of the study of Louisiana geology. The problems of the stratigraphy of the state can be attacked successfully only by a careful study of the fossils. The promptness with which the report has been published is one of its many virtues. The work was begun in November 1898, and Professor Harris' letter of transmission is dated November 1899. Such promptness, however, sometimes has its disadvantages. It is doubtless responsible for several important typographical errors, for the awkward title-page that gives neither date nor place of publication, and for the unfinished condition in which the maps appear. Perhaps it is just as well that the geological map accompanying the report is credited to no one, for to no one is it a credit. With the exception of the maps the volume is well printed and tastefully bound; and the defects we may find in the mechanical part of the work are very small matters compared with the valuable contributions to science contained in the report.

JOHN C. BRANNER.

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*On the Lower Silurian (Trenton) Fauna of Baffin Land.* By CHARLES SCHUCHERT, Proc. U. S. Nat. Mus., Vol. XXII, pp. 143-177, plates XII-XIV.

Any addition to our knowledge of the fossil faunas of the arctic regions is received with special satisfaction by those who are interested in the broader problems of palæontology, in which the facts of geographic distribution are of special moment. The present paper by Mr. Schuchert is one of the most important of such contributions to be found in our literature. It is devoted to the description and discussion of more complete collections of fossils from Sillman's Fossil Mount at the head of Frobisher Bay, than have previously been secured from that locality. Seventy species of fossils are recorded, eighteen being described as new. The fauna shows strong affinities with the Trenton fauna of the United States, especially with the fauna of that age as it is known in Minnesota, a large proportion of the species being common to the two regions.

The Trenton fauna has been recognized at various localities in the arctic regions, the strata containing it always resting unconformably upon the old crystalline rocks. No other Ordovician fauna has been recognized in the whole region save at one locality, on Frobisher Bay,